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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, DAVID J	
ART UNIT	**PAPER NUMBER**
2613	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/007,531	NISHIMURA ET AL.	
	Examiner	Art Unit	
	David Lee	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-34,36-40,43-45 and 48-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29,30,33,34,36-39,43,44 and 48-51* is/are rejected.

7)☒ Claim(s) *31, 32, 40, 45, 52-55* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicants' arguments filed 10/10/2006 have been fully considered but they are not persuasive.

Independent claim 29

Claim 29 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view of Olsson. Applicants argue that the 35 U.S.C. 103(a) rejection of claim 29 is improper because it allegedly fails to establish a *prima facie* case of obviousness. Applicants allege that the combination of references is improper and that the references lack express teaching of specific limitations. Examiner will first address the latter issue and then substantiate the propriety of the 35 U.S.C. 103 rejection of claim 29.

MPEP § 904.01 recites:

> "The breadth of the claims in the application should always be carefully noted; that is, the examiner should be fully aware of what the claims do not call for, as well as what they do require. During patent examination, the claims are given the broadest reasonable interpretation consistent with the specification. See In re Morris, 127 F.3d 1048, 44 USPQ2d 1023 (Fed. Cir. 1997).

Additionally, it is noted that during prosecution before the USPTO, claims are to be given their broadest reasonable interpretation and the scope of a claim cannot be narrowed by reading disclosed limitations into the claim. See *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541,550 (CCPA 1969).

The combined invention of Erdogan and Olsson teaches a delay component as claimed

Applicants argue that the combined invention of Erdogan and Olsson does not teach the following limitation of claim 29:

> "a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to a first beam in the plurality of beams and generate a delayed second beam by providing a second delay to a second beam in the plurality of beams."

Applicants support this position by arguing that "[p]ersons of ordinary skill in the art will recognize that a spectrometer 'providing a group delay' does not anticipate Applicants' delay component, defined in claim 29, which produces two delayed beams and has been described as such in Applicants' original specification and figures" (see pg. 4 of Applicants' Remarks).

Examiner must respectfully disagree with Applicants' arguments for at least two reasons. First, it is noted that arguments or conclusions of attorney cannot take the place of evidence. See *In re Cole*, 51 CCPA 919,326 F.2d 769, 140 USPQ 230 (1964); *In re Schulze*, 52 CCPA 1422, 346 F.2d 600, 145 USPQ 716 (1965); *Meitzner v. Mindick*, 549 F.2d 775, 193 USPQ 17 (CCPA 1977). Examiner has established a rejection of the limitation using evidence from prior art and the only support that Applicants provides in response is that "[p]ersons of ordinary skill in the art will recognize that a spectrometer 'providing a group delay' does not anticipate Applicants' delay component." Without any supporting evidence, Applicants' allegation of any lack of teaching of the prior art is merely Applicants' own opinion and interpretation of the reference and cannot be substantiated.

Furthermore, the combined invention teaches all the limitations above. Applicants' attention is directed to Figure 2 of Olsson. Shown is an embodiment of a spectrometer module comprising a beamsplitter (516 of Fig. 2) which splits incoming light (514 of Fig. 2) into a

plurality of beams and a delay component comprising delay units (511 and 517 of Fig. 2) which are optically coupled to the beamsplitter and generate first and second delayed beams. Clearly, this reads on the limitation "a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to a first beam in the plurality of beams and generate a delayed second beam by providing a second delay to a second beam in the plurality of beams."

Accordingly, Examiner maintains the position that the combined invention of Erdogan and Olsson clearly and reasonably teaches the limitation, "a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to a first beam in the plurality of beams and generate a delayed second beam by providing a second delay to a second beam in the plurality of beams."

The combined invention of Erdogan and Olsson teaches a walk-off crystal as claimed

Applicants argue that the combined invention of Erdogan and Olsson fails to teach the walk-off crystal defined in claim 29, reproduced below:

> "a walk-off crystal configured to split each of the optically scaled first and second beams into a first and a second pair of beams."

The basis for Applicants' argument is that the instant limitation teaches a single walk-off crystal to split each of two beams into a first and second pair of beams, while the combined invention of Erdogan and Olsson teaches two walk-off crystal units to split each of two beam beams into a first and second pair of beams (60_1 and 60_2 of Fig. 12 of Erdogan). However, it is noted that unless improved results are achieved through integration, two components can be considered integral as long as all of the essential elements of the claims except the integration of

parts are found in the references. See *In re Lockhart*, 90 USPQ 214 (CCPA 1951). As such, since the walk-off crystal units of Erdogan (60_1 and 60_2 of Fig. 12) perform all the functions as claimed and since it is a matter of engineering choice to make two components integral, the walk-off crystal units of Erdogan are understood collectively as a walk-off crystal. See also *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965), "To Make Integral."

The rejection of claim 29 is based on a combination of references

Applicant argues that "Erdogan does not even disclose that his single input beam is a delayed beam, which is in contrast to Applicants' first and second beams that are individually delayed by the delay component" (see pg. 5 of Applicants' Remarks). Applicant also argues that the cited prior art "fails to disclose any kind of delay component that is specifically placed ahead of a birefringent component (see pg. 5 of Applicants' Remarks). However, it is noted that these arguments are attacking the references individually where the rejections are based on a combination of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). As discussed in the instant and previous Office action, when the teachings of Erdogan are combined with the teachings of Olsson, the combination clearly teaches that the walk-office crystal of Erdogan receives delayed beams of Olsson and that the delay component of Olsson is placed ahead of the birefringent component of Erdogan.

It is also noted that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the

test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). A similar line of reasoning is applied to claim 48.

The combined invention of Erdogan and Olsson is proper

Along with arguing against certain individual components taught by the combined invention of Erdogan and Olsson, all of which have been addressed above, Applicants' have also argued against the conceptual basis of the *prima facie* case of obviousness formulated by examiner.

Applicants argue that the "the Office action statements related to a 'spectrometer module/signal monitoring function' bears no relevance to Applicants' claim 29, because Applicants' claim 29 does not include a spectrometer" (see pg. 3 of Applicants' Remarks, original emphasis). Applicant insists that this and other corresponding statements are "misleading and erroneously conclusive." Examiner respectfully disagrees with Applicants' characterization of the formulated rejection.

Claim 29 teaches a beamsplitter (hereinafter referred to as "*A*" for the sake of simplicity), a delay component (hereinafter referred to as "*B*"), a birefringent component (hereinafter referred to as "*C*"), a walk-off crystal (hereinafter referred to as "*D*"), and an array of photodetectors (hereinafter referred to as "*E*"). The limitations *A*, *B*, *C*, *D*, and *E* of Claim 29 have been rejected over Erdogan in view of Olsson.

As discussed in the instant and previous Office actions, Erdogan teaches *A*, *C*, *D*, and *E*, while Olsson teaches a spectrometer module (hereinafter referred to as "*Z*") which comprises *B*.

In formulating a motivation to combine the references, Examiner has pointed out that a skilled artisan would have been motivated to include the spectrometer module *Z* of Olsson in the system of Erdogan in order to provide signal quality measurement capabilities so as to increase system performance and reliability. Olsson, in the same field of endeavor as Erdogan, discusses in large part the issues facing optical communication networks. Specifically, Olsson cites:

> "as these networks are becoming larger and larger, and including more and more sophisticated network components, the risk for network faults is increasing rapidly. Consequently, there is a need for surveillance systems, keeping track of the optical signals being transmitted in the network, and reporting when an error has occurred" (see col. 1, lines 23-29 of Olsson).

Olsson continues on to disclose proposed means of monitoring signal quality for improvement of communication networks (see e.g., col. 1, line 30 to col. 2, line 10) and discusses how these spectrometry systems can provide certain significant advantages for a typical optical communication system (see "summary of the invention" in cols. 2-5).

Following these teachings of Olsson, a skilled artisan would have been motivated to incorporate the spectrometer module *Z* of Olsson in the optical communication system *A*, *C*, *D*, and *E* of Erdogan. Here it is noted that the spectrometer module Z of Olsson comprises a delay component *B*. As such, the combination of Erdogan and Olsson would teach *A*, *B*, *C*, *D*, *E*, and *Z* which encompasses all of the instant limitations *A*, *B*, *C*, *D*, and *E* of claim 29. As such, the rejection of claim 29 over Erdogan and Olsson along with the line of reasoning made by examiner in formulating said rejection is not only relevant, but also appropriate and satisfies the requirements of MPEP 706.2(j) for establishing a *prima facie* case of obviousness.

Furthermore, Applicants argue that "persons of ordinary skill in the art will recognize that monitoring of communication systems is more commonly carried out in the electrical domain

(for example, by using bit-error rate (BER) measurements) rather than in the optical domain" (see pg. 3 of Applicants' Remarks). Again, it is noted that arguments or conclusions of attorney cannot take the place of evidence. See *In re Cole*, 51 CCPA 919,326 F.2d 769, 140 USPQ 230 (1964); *In re Schulze*, 52 CCPA 1422, 346 F.2d 600, 145 USPQ 716 (1965); *Meitzner v. Mindick*, 549 F.2d 775, 193 USPQ 17 (CCPA 1977). Examiner has established a rejection of the limitation using evidence from prior art, and Applicants' allegation, without any supporting evidence, is merely Applicants' own opinion and interpretation and cannot be substantiated. Additionally, the position that the Applicants are advancing is not quite clear. Applicants allegedly state, without providing evidence, that monitoring is more commonly carried out in the electrical domain rather than the optical domain, but examiner has provided a reference to explicitly show that it is well known to carry out monitoring in the optical domain (Olsson). It seems that Applicants' arguments regarding this issue merely amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. See 37 CFR 1.111(b).

Additionally, Applicants argue that "Examiner has inserted his own subjective reasoning in carrying out the rejection without logical support in the cited art." Applicants cite MPEP 2141, suggesting that examiner is using "impermissible hindsight" and concocting an "allegedly-anticipatory element from the cited prior art" (pg. 4 of Applicants' Remarks). As discussed above (under heading "The combined invention of Erdogan and Olsson is proper"), it is noted that the motivation to combine the references comes not from examiner's own subjective reasoning but explicitly from the discussions and motivations as cited by Olsson. Also, in response to applicant's argument that the examiner's conclusion of obviousness is based upon

improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Since the combination of Erdogan and Olsson takes into account only knowledge within the level of ordinary skill and does not include knowledge gleaned only from the applicant's disclosure, the reconstruction of claim 29 made by examiner is proper.

For at least the foregoing reasons, it is the examiner's position that, broadly and reasonably interpreted, the combined invention of Erdogan and Olsson teaches all the limitations of claim 29 and that a proper *prima facie* case of obviousness has been established under 35 U.S.C. 103(a).

Dependent claims 33, 36, and 37

Dependent claims 33, 36, and 37 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view Olsson and in further view of admitted prior art.

Applicants argue that the motivation to include a polarization beam splitter to transmit signals to their desired destinations is "purely speculative as well as erroneous because it is not an automatic given that a polarization beam splitter would be used to transmit signals to desired destinations" (see pg. 7 of Applicants' Remarks). However, it is noted that examiner is not asserting that using a polarization beam splitter to transmit signals to desired destinations is an "automatic given," but rather, that the incorporation of a polarization beam splitter into the

combined invention of Erdogan and Olsson would allow signals to be effectively transmitted to their desired destinations; this approach is not "speculative" nor is it claiming inherency (i.e. – "automatic given"), but rather it is merely recognizing that a polarization beam splitter can be advantageously incorporated into the system of Erdogan and Olsson. Furthermore, it is noted that, as discussed above, arguments or conclusions of attorney cannot take the place of evidence. Applicants' assertion that the rejection is "purely speculative" is unsupported and amounts merely to Applicants' own opinion and interpretation of the reference and cannot be substantiated.

Dependent claims 30, 39, 43, and 44

Dependent claims 30, 39, 43, and 44 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view Olsson and in further view of Epworth.

Applicants argue that the motivation to combine the teachings of Epworth with the teachings of Erdogan and Olsson is "purely speculative as well as improper," and that examiner has made an erroneous assumption. No support is provided for these allegations and as mentioned above, arguments or conclusions of attorney cannot take the place of evidence. Applicants' assertion that the rejection is "purely speculative" is unsupported and amounts merely to Applicants' own opinion and interpretation of the reference and cannot be substantiated. Regarding claims 30, 39, 43, and 44, Applicants' arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

In view of at least the above reasons, Examiner maintains the positions advanced in the Office action mailed 7/13/2006. Accordingly, **THIS ACTION IS MADE FINAL.** Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 29, 34, 38, and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan et al. (US Pub. No. 2002/0024704 A1) in view of Olsson et al. (US Patent No. 6,765,670 B1).

Regarding claims 29 and 38, Erdogan teaches a system for performing time-domain equalization, the system comprising: a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams (74 of fig. 12); a birefringent component configured to receive the first beam and the second beam and operable to optically scale the first and second beams by providing a first rotation of a polarization plane of the first beam and a second rotation of a polarization plane of the second beam (60_1 and 60_2 of fig. 12; both these birefringent units are understood as a birefringent component); a walk-off crystal configured to split each of the optically scaled first and second beams into a first and a second pair of beams (PBS of fig. 12 is considered a walk off crystal in that it performs the claimed function of splitting each of the first and second beams; note also that both walk-off crystal units are collectively understood as a walk-off crystal); and an array of photodetectors comprising a first and a second pair of photodetectors configured to receive the first and the second pair of beams respectively and generate therefrom a first and a second electrical component of an electrical signal that corresponds to the input optical signal after time-domain equalization (detector array

not shown in instant figure, but see, e.g., detectors in figs. 11, 13; see also 40 of fig. 4). Erdogan does not expressly disclose a spectrometer module/signal monitoring function comprising a delay component. However, it is well known to incorporate spectrometry and monitoring functions in communication systems in order to decrease the risk for network faults and to keep track of signals and to report when errors occur (e.g., see col. 1, lines 19-37 of Olsson). Olsson, in the same field of endeavor as Erdogan, discusses in large part the issues facing optical communication networks (see col. 1, lines 23-29 of Olsson) and how the proposed means of monitoring signal quality can provide certain significant advantages for a typical optical communication system (see "summary of the invention" in cols. 2-5). Following these teachings of Olsson, it would have been obvious to a skilled artisan at the time of invention to incorporate the spectrometer module in the system of Erdogan in order to provide data and signal quality monitoring capabilities so as to increase system reliability and performance. It is also noted that Olsson also teaches that a delay component is provided in the spectrometer module: "by using a variable DGD [differential group delay] element in a spectrometer module, it is possible to perform measurements on an incoming optical light signal, for detecting parameters such as polarization state and degree of polarisation as a function of the wavelength of the incoming signal" (col. 2, lines 36-40; see also DGD element 511 of fig. 2). It would have been obvious to a skilled artisan at the time of invention to incorporate a differential group delay component in the spectrometer module in order to extend detection and monitoring capabilities and further increase system reliability. Note that this DGD element would be coupled to the beamsplitter of Erdogan and that each link exiting the 3dB coupler of Erdogan would have monitoring

capabilities (see, e.g., fig. 2 of Olsson – two links are shown to include DGD elements 511 and 517 with associated monitoring capabilities).

Regarding claim 34, Erdogan teaches that the rotation of the polarization plane determines the intensity of beams in the first pair of beams (APC of fig. 12: depending on the intensity distribution, rotating the plane will produce different intensities).

Regarding claims 48 and 49, Erdogan teaches a system for performing time-domain equalization, the system comprising: a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams (74 of fig. 12); a birefringent component configured to receive the first beam and the second beam and operable to use first and second scaling coefficients to set the first and second beams to a first and second intensity (60_1 and 60_2 of fig. 12: the "scaling coefficients" are considered to be the amount of rotation of the polarization plane provided by the APC; note that the amount of rotation determines the intensity; note also that both birefringent units are understood collectively as a birefringent component); a walk-off crystal configured to split each of the optically scaled first and second beams into a first and a second pair of beams (PBS of fig. 12 is considered a walk off crystal in that it performs the claimed function of splitting each of the first and second beams; note also that the walk-off crystal units are collectively understood as a walk-off crystal); and an array of photodetectors comprising a first and a second pair of photodetectors configured to receive the first and the second pair of beams respectively and generate therefrom a first and a second electrical component of an electrical signal that corresponds to the input optical signal after time-domain equalization (detector array not shown, but see, e.g., detectors in figs. 11, 13; see also 40 of fig. 4). Erdogan does not expressly disclose a spectrometer module/signal monitoring

function comprising a delay component. However, it is well known to incorporate spectrometry and monitoring functions in communication systems in order to decrease the risk for network faults and to keep track of signals and to report when errors occur (e.g., see col. 1, lines 19-37 of Olsson). Olsson, in the same field of endeavor as Erdogan, discusses in large part the issues facing optical communication networks (see col. 1, lines 23-29 of Olsson) and how the proposed means of monitoring signal quality can provide certain significant advantages for a typical optical communication system (see "summary of the invention" in cols. 2-5). Following these teachings of Olsson, it would have been obvious to a skilled artisan at the time of invention to incorporate the spectrometer module in the system of Erdogan in order to provide data and signal quality monitoring capabilities so as to increase system reliability and performance. It is also noted that Olsson also teaches that a delay component is provided in the spectrometer module: "by using a variable DGD [differential group delay] element in a spectrometer module, it is possible to perform measurements on an incoming optical light signal, for detecting parameters such as polarization state and degree of polarisation as a function of the wavelength of the incoming signal" (col. 2, lines 36-40; see also DGD element 511 of fig. 2). It would have been obvious to a skilled artisan at the time of invention to incorporate a differential group delay component in the spectrometer module in order to extend detection and monitoring capabilities and further increase system reliability. Note that this DGD element would be coupled to the beamsplitter of Erdogan and that each link exiting the 3dB coupler of Erdogan would have monitoring capabilities (see, e.g., fig. 2 of Olsson – two links are shown to include DGD elements 511 and 517 with associated monitoring capabilities).

Regarding claim 50, Erdogan does not specifically disclose that the coefficients are "equal to one of a) +1, b) –1, and c) 0." However, absent any teaching of criticality, it would have been a matter of design choice, or given the general environment of the prior art, it would have been obvious to obtain an optimal or requested value by routine experimentation. Therefore, a coefficient equal to one of a) +1, b) –1, and c) 0 would have been attainable for one skilled in the art.

4. Claims 33, 36, 37, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view of Olsson and in further view of admitted prior art.

Regarding claim 33 and 51, Erdogan does not specifically disclose that the birefringent component comprises an array of liquid crystal cells. However, it is well known to provide polarization rotation in birefringent components as indicated by admitted prior art. It is taken to be admitted prior art because applicant failed to traverse examiner's assertion of official notice. See MPEP 2144.03[R-1]. It would have been obvious to a skilled artisan at the time of invention to use liquid crystal cells in the birefringent component in order to provide accurate and efficient polarization rotation.

Regarding claims 36 and 37, Erodgan does not expressly disclose that the first optical signal originated from a polarization splitter. However, polarization beam splitters in network configurations are well known as indicated by admitted prior art. It is taken to be admitted prior art because applicant failed to traverse examiner's assertion of official notice. See MPEP 2144.03[R-1]. It would have been obvious to a skilled artisan at the time of invention to include

a polarization beam splitter to transmit signals to their desired destinations. Note that the polarizations of split signals can be configured to have different polarizations.

5. Claims 30, 39, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view of Olsson and in further view of Epworth (US Patent No. 6,271,952).

Regarding claims 30, 39, and 44, the combined invention of Erdogan and Olsson teaches the limitations of claims 29 and 38 but does not expressly disclose a control system configured to control the birefringent component for rotation of the polarization plane of the first beam, wherein the rotation provides an optical scaling of the delayed first beam. Epworth, from a similar field of endeavor, discloses a birefringent component configured to rotate a polarization plane of a beam (6 of fig. 2) and a walk-off crystal configured to receive the beam and split the beam into a first pair of beams (8 of fig. 2), further comprising a control system (10 of fig. 2) configured to control the birefringent component for rotation of the polarization plane of the first beam wherein the rotation provides an optical scaling of the delayed first beam (see col. 5, lines 16-30). It would have been obvious to a skilled artisan at the time of invention to use the control system of Epworth to control the birefringent component of the beam in the system of Erdogan in order to increase signal quality and provide flexible rotation coefficients.

Regarding claim 43, the combined invention of Erdogan, Olsson and Epworth teaches the limitations of claims 30, 33, and 38, but does not expressly disclose that the birefringent component under control is an array of liquid crystal cells. However, the use of liquid crystal cells is well known and widely used in providing polarization rotation in birefringent components as indicated by admitted prior art. It is taken to be admitted prior art because

applicant failed to traverse examiner's assertion of official notice. See MPEP 2144.03[R-1]. It would have been obvious to a skilled artisan at the time of invention to use liquid crystal cells in the birefringent component in order to provide accurate and efficient polarization rotation.

Allowable Subject Matter

6. Claims 31, 32, 40, 45, and 52-55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David Lee
Patent Examiner

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